G:\WPB\Draft\Redstone\EA0030457.doc DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER PROTECTION BUREAU
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ENVIRONMENTAL ASSESSMENT (EA)

Division/Bureau: Permitting & Compliance Division, Water Protection Bureau

Project or Application: Redstone Gas Partners, MPDES Permit No. MT-0030457

Description of Project: This application is for the issuance of a wastewater discharge permit to Redstone Gas Partners (RGP) of Denver, Colorado for discharge of produced water from coal bed methane wells located in the Big Horn County, Montana. Discharge is to the Tongue River, which is classified "B-2" by the Montana Surface Water Quality Standards. The Tongue River in the area of discharge is listed on Montana's 303(d) list as partially supporting for agricultural and warm-water fisheries and is given a low priority for TMDL development. The waterbody number for the affected segment is MT42C0011.

Benefits and Purpose of Proposal:

RGP holds valid federal, state and private oil and gas leases in the project area. The leases have created contractual and legal property rights for RGP from the United States, the State of Montana and private mineral landowers to develop natural gas resources. The purpose of RGP's proposal is to extract and gather natural gas at a profit from the coal resources in the project area. The intial phase of the project is to determine the technical and economic feasibility of this venture.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider:

None

Listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by this or another government agency:

Limit total volume of discharge to 1,600 gallons per minute.

Affected Environment and Effects from the Proposed Project:

Key to Rank	
NA	*Not applicable*
N	*No effects*
B	*Potentially beneficial effects*
A	*Potentially adverse effects*
M	*Corrective action required*
P	*Additional permits will be required*

Rank	Consideration	Remarks
	PHYSICAL AND BIOLOGICAL ENVIRONMENT	
N	1. SOIL SUITABILITY, TOPOGRAPHIC AND/OR GEOLOGIC CONSTRAINTS (soil moisture, unstable soils or geologic conditions, steep slopes, erosion potential, subsidence potential, seismic activity)	Permit authorizes direct discharge to receiving waters. High salinity in effluent will be diluted with receiving water while maintaining the suitability of the receiving water irrigation, as well as other beneficial uses. The permit does not authorize discharge to ephemeral drainages or allow overland flow where soil erosion may occur.
N	2. HAZARDOUS FACILITIES (power lines, hazardous waste sites, distances from explosive and flammable hazards including chemical/petroleum storage tanks, underground fuel storage tanks and related facilities such as natural gas storage facilities and propane tanks)	Gas in immediate vicinity of discharge pipe may be combustible but is not considered explosive or hazardous. Dewatering of aquifer may create potential for spontaneous combustion. Depth of target seams makes this condition less likely than shallower seams, which will not be targeted by this development.
N	3. AIR QUALITY (effects to or from project, dust, odors, emissions)	Compressor stations require DEQ air quality permit and must comply with applicable air standards.
N	4. GROUNDWATER RESOURCES & AQUIFERS (quality/nondegradation, quantity/reliability, distribution, uses/rights, number of aquifers, mixing zones)	CBM development will partially deplete stored groundwater from aquifers in the vicinity of the project. Some wells may dry up in the project area. These aquifers will recharge when pumping is discontinued. The limited number of wells authorized in the current permit is not expected to have a significant effect on regional water levels. Coal extraction has already depleted aquifers in the project area. The project area is part of the Powder River Basin Controlled Groundwater Area administered by DNRC. This designation establishes groundwater monitoring, performance standards and mitigation requirement for CBM production. CBM developers are required to compensate landowners for loss of water resources.
N	5. SURFACE WATER RESOURCES (quality/nondegradation, quantity/reliability, distribution, uses/rights, storm water controls, source of community supply, community treatment, mixing zones)	The total volume of produced water authorized by the discharge permit will not exceed 1,600 gallons per minute (gpm). Discharge at this volume and quality will protect all beneficial uses of the receiving water and comply with Montana water quality standards and nondegradation criteria. The permit requires in-stream monitoring to assess the potential impacts from other coal bed methane development in the drainage. The permit limits require compliance with nondegradation and water quality standards at the 7-day, 10-year low flow, this measure provides a considerable margin of safety to allow for cumulative impacts. Changes in water quality resulting from the project discharges are analyzed in the Statement of Basis for Permit MT-0030457.
N	6. VEGETATION AND WILDLIFE SPECIES AND HABITATS, INCLUDING FISHERIES AND AQUATIC RESOURCES (threatened, endangered, sensitive species, prime habitat, population stability, potential for human wildlife conflicts, effectiveness of post-disturbance plans)	The discharge will not have any adverse effects on aquatic life including fisheries. The minimal amount of surface disturbance associated with the exploration phase should not have any adverse impacts.
N	7. UNIQUE, ENDANGERED, FRAGILE, OR LIMITED ENVIRONMENTAL RESOURCES (biologic, topographic, wetlands (within one mile), floodplains (within one mile), scenic rivers, natural resource areas, etc.)	No unique, endangered or fragile resources have been identified in the project area.

N	8.	LAND USE (waste disposal, agricultural lands [grazing, cropland, forest lands, prime farmland], recreational lands [waterways, parks, playgrounds, open space, federal lands), access, commercial and industrial facilities [production & activity, growth or decline], growth, land-use change, development activity)	No adverse impacts to land use are expected from the proposed action.
N	9.	HISTORICAL, CULTURAL, & ARCHEOLOGICAL (sites, facilities, uniqueness, diversity)	No historical, cultural or archeological resources will be affected by the proposed action.
N	10.	AESTHETICS (visual quality, nuisances, odors, noise)	CBM facilities are dispersed and are designed to be compatible with the surrounding environment.
N	11.	DEMANDS ON OR CHANGES IN ENVIRONMENTAL RESOURCES INCLUDING LAND, WATER, AIR, OR ENERGY USE (need for new or upgraded energy sources, potential for recycling, etc.) {See (4), (5), and (8).}	The scope of the present project is not anticipated to have any adverse effect on other resources.

Rank	Consideration	Remarks
IMPACTS ON THE HUMAN POPULATION		
N	12. CHANGES IN DEMOGRAPHIC CHARACTERISTICS (population quantity, distribution and density, rate of change)	The project has minimal workforce associated with it. Drilling of wells is completed with four to six member temporary crews. Most employees are housed in Sheridan, Wyoming, which has adequate facilities to accommodate the small change in population characteristics.
N	13. GENERAL HOUSING CONDITIONS (quality, quantity and affordability)	No effect; see Item 12.
N	14. POTENTIAL FOR DISPLACEMENT OR RELOCATION OF BUSINESS OR RESIDENTS	No effect; see Item 12.
N	15. PUBLIC HEALTH AND SAFETY (medical services and facilities, police, fire protection and hazards [see (2)], emergency medical services [see (8), LAND USE for waste disposal])	No effect; see Item 12.
N	16. LOCAL EMPLOYMENT AND INCOME PATTERNS (quantity and distribution of employment, economic impact)	No effect; see Item 12.
B	17. LOCAL AND STATE TAX BASE AND REVENUES	Additional tax revenues will be generated from the extraction of natural gas.
N	18. EFFECTS ON SOCIAL STRUCTURES AND MORES (social conventions/standards of social conduct), DEMANDS ON SOCIAL SERVICES (law enforcement, educational facilities [libraries, schools, colleges, universities], welfare, etc.)	No effect; see Item 12.
N	19. TRANSPORTATION NETWORK (condition and use of roads, traffic flow conflicts, rail, airport compatibility, etc.)	Small increase in local roads due to drill equipment during start up of operation.
N	20. CONSISTENCY WITH LOCAL ORDINANCES, RESOLUTIONS, OR PLANS (conformance with local comprehensive plans, zoning or capital improvement plans)	There are no local ordinances or plans that would conflict with the proposed development.
N	21. REGULATORY RESTRICTIONS ON PRIVATE PROPERTY RIGHTS (*Are we regulating pursuant to a police power? Does the Agency action restrict the use of the property beyond the minimum necessary to achieve compliance with the Act? What are the costs of such additional restrictions resulting from proposed permit conditions? Are there other, less restrictive ways of achieving the same goal?*	The permit restricts the volume of effluent discharged by the development in accordance with the water quality act. This limit may restrict the applicant's ability to develop the gas resource until alternative methods of disposal are developed.

Private Property Takings Assessment and Discussion:

PRIVATE PROPERTY ASSESSMENT ACT CHECKLIST

Does the proposed agency action have takings implications under the Private Property Assessment Act?

SM: Rev.1

Query	YES/NO	Remarks/Justification
1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?	Yes	The action is issuance of a discharge permit to state waters.
2. Does the action result in either a permanent or indefinite physical occupation of private property?	No	The permit does not effect occupation of private property. See Part IV.K of the permit.
3. Does the action deprive the owner of all economically viable uses of the property?	No	The permit affect on discharge of pollutants to state waters.
4. Does the action deny a fundamental attribute of ownership?	No	Discharge of pollutants to state waters is not a fundamental attribute of ownership.
5. Does the action require a property owner to dedicate a portion of property or to grant an easement?	No	(If NO, then skip to (6).) The permit does not contain any such requirement.
a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?		
b. Is the government requirement roughly proportional to the impact of the proposed use of the property?		
6. Does the action have a severe impact on the value of the property?	No	Granting of the discharge permit should have no effect on property value.
7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?	No	(If NO, then skip to (8).) The permit causes no physical disturbance to the property.
a. Is the impact of government action direct, peculiar, and significant?		
b. Has government action resulted in the property becoming practically inaccessible, waterlogged, or flooded?		
c. Has government action diminished property values be more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?		
8. Do taking or damaging implications exist? [(1)] *Taking or damaging implications exist if the answer to questions 5a or 5b is NO, or if the answer to question (1) and any other question is YES.*	No	

[(1)] *If taking or damaging implications exist the agency must comply with ' 5 of the Private Property Assessment Act, to include the preparation of a taking or damaging impact assessment. Normally, the preparation of an impact assessment will require consultation with agency legal staff.*

Other groups or governmental agencies contacted or which may have overlapping jurisdiction:

Board of Oil & Gas Conservation Division – CBM well drilling permits; Department of Natural Resources and Conservation, Water Rights Bureau – controlled groundwater withdraw; Bureau of Land Management, Miles City Field Office - approval of Application to Drill and Surface Use Plan of Operations; DEQ/PCD AWM Bureau - air quality permits for compressor station; DEQ/PPAD RPP Bureau - water quality standards.

Public Involvement:

A 30 day public comment period on the draft permit began August 13, 1999 and lasted through September 13, 1999 (MT-99-11). Public notice of the draft permit was sent to the department's mailing list for those individuals who have expressed an interest in discharge permits in the Yellowstone drainage or statewide. No public comments were received during the public comment period.

Individuals or groups contributing to this EA:

State of Montana, DEQ Permitting & Compliance Division

Summary of Issues:

Effects of the proposed CBM discharge on water quality in the Tongue River.

Summary of Potential Effects:

The discharge will increase the concentration of some parameters in the receiving water, including sodium, total dissolved solids (TDS) and ammonia. The temperature of the receiving water during winter months may also increase. These changes in water quality have been analyzed in the Statement of Basis for permit MT-0030457 and will not have a measurable impact on present and future beneficial uses in the Tongue River, or cause degradation of the receiving water. The increase in salinity, as measured by the sodium adsorption ratio (SAR) is projected to increase from 0.81 to 4.7 at the 7-day, 10 year low flow (7-Q-10). The 7-Q-10 flow occurs very infrequently. At higher flows the increase will be proportionally less than the 7-Q-10. At the median flow of 458 cfs the SAR level is projected to be 1.2. There are no numeric water quality standards for SAR in Montana, therefore the Department has followed recommended values published by the USDA (Agriculture Handbook No. 60, Diagnosis and Improvement of Saline and Alkali Soils). Suitability of waters for irrigation use is based on both conductivity and SAR. Based on the dissolved solids concentration in the Tongue River the SAR must be maintained below 8 to maintain it's suitability for irrigation use. The CBM project discharges will not adversely affect the use on water in the Tongue River for this purpose. The CBM project discharges will not have a measurable change in SAR below the Tongue River reservoir due to the mixing affect caused by the reservoir.

Cumulative Effects:

The potential impact on the Tongue River from other coal bed methane development has been included in the analysis. Brian Heath of the Wyoming NPDES program was contacted for information on quality and quantity in Wyoming. Produced water has substantially less sodium and TDS than in Montana. Specific conductance averages 1,250 μmhos/cm and 226 mg/L sodium. Permit MT-0030457 limits the total volume of produced water discharged to the Tongue River. Limited CBM development could still occur in Wyoming without significant adverse effects on water use in Montana. The permit contains in-stream monitoring requirements to assess any change in background conditions. Further, the term of the permit has been shortened to 3 years so that cumulative effects may be better assessed when the exploration phase is completed.

Recommendation:

Grant the permit with the proposed effluent limitations. Any CBM development that proceeds beyond the exploration stage, or contributes to additional cumulative effects (groundwater dewatering or water quality impacts) is outside of the scope of this analysis and would require additional environmental analysis.

Recommendation for Further Environmental Analysis:

☐ Prepare an EIS ☐ Prepare a more detailed EA X No further analysis

EA prepared by: Tom Reid Date: June, 2000

Bureau Check-off

AWMB _____ CSB _____ EMB _____
IEMB _____ WPB X Other _____

Approved by:

Bonnie Lovelace, Bureau Chief
(Print name and title)

_____ _____
(Signature) (Date)